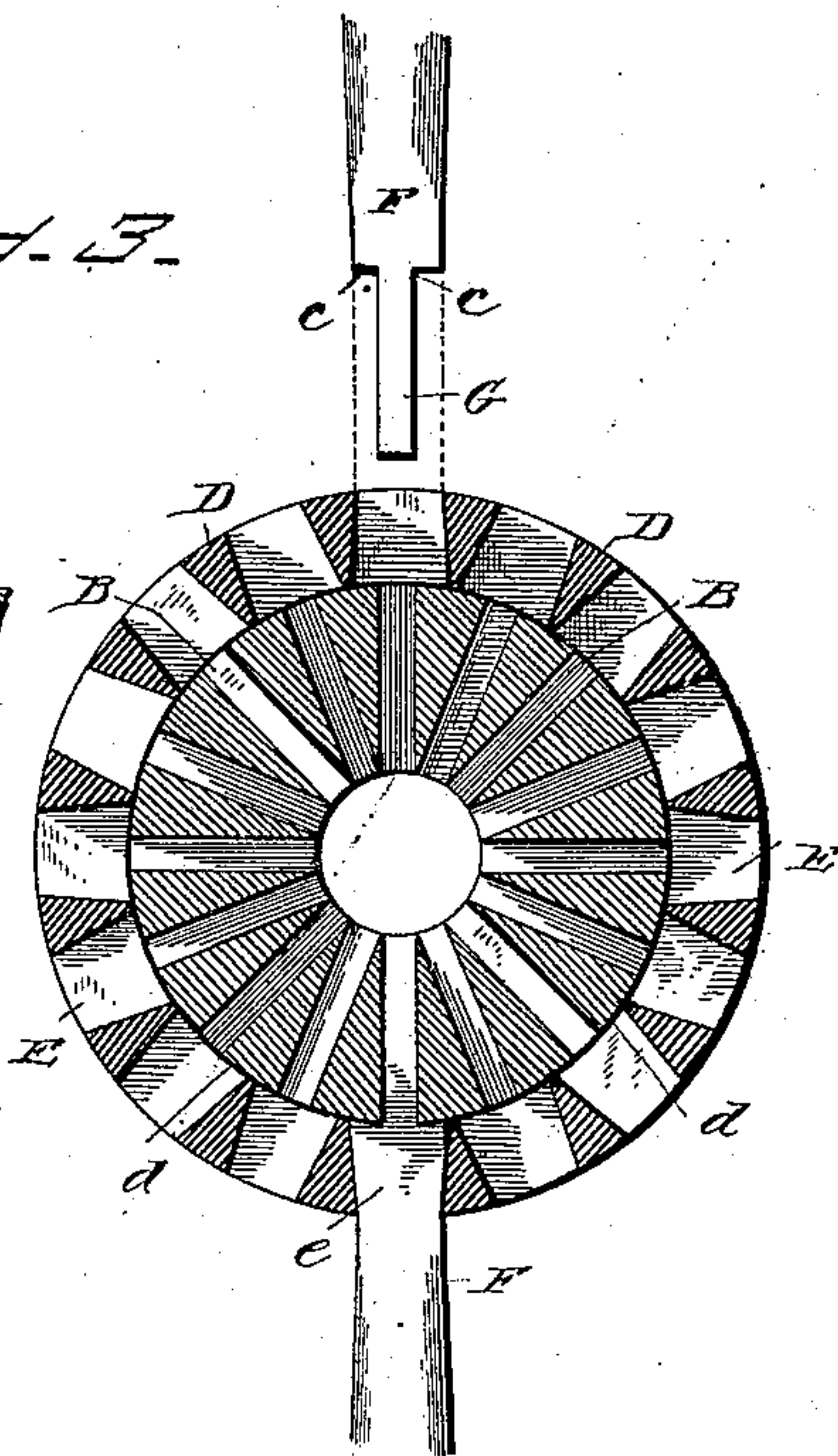
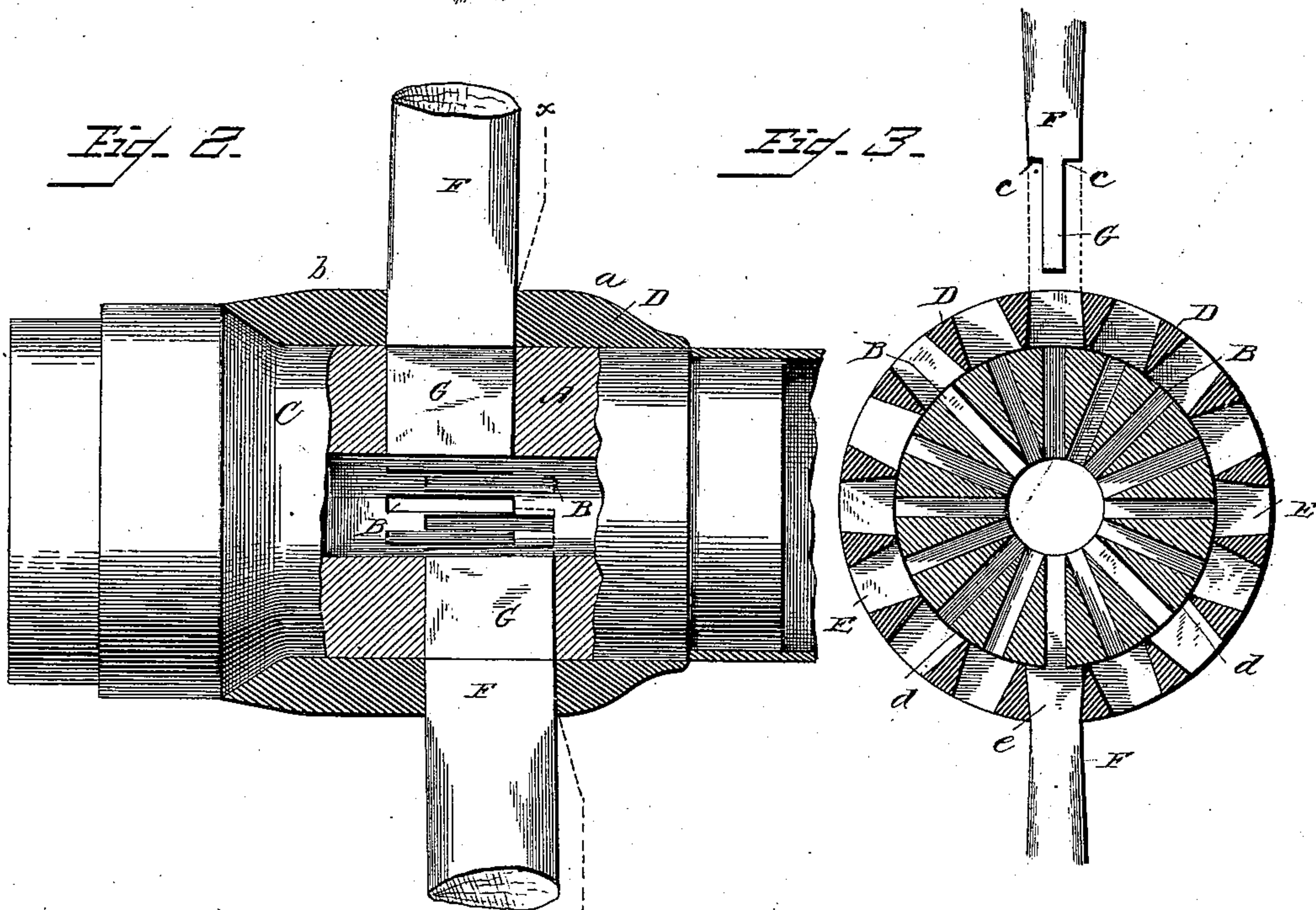
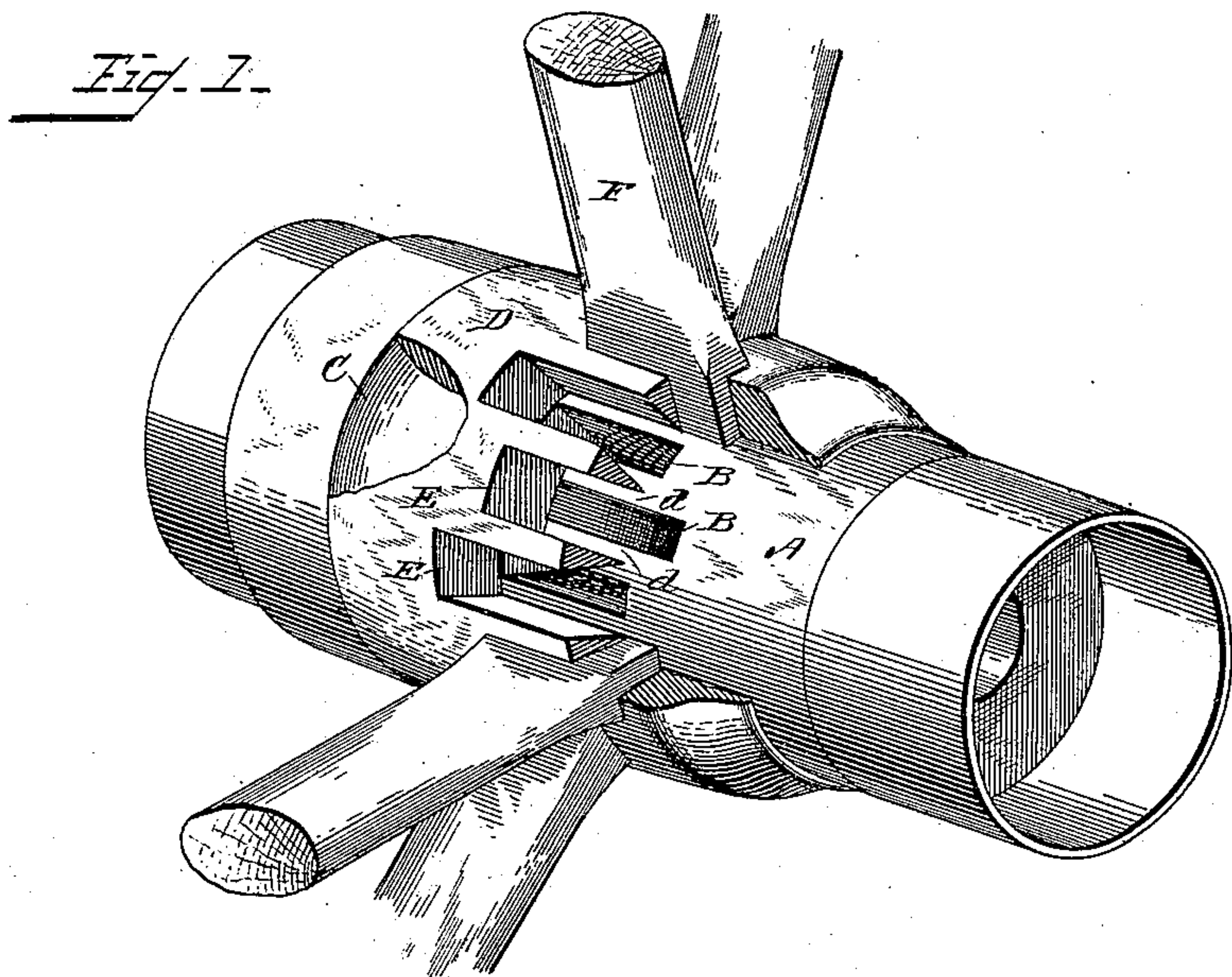


(No Model.)

B. SCHAD.
VEHICLE HUB.

No. 370,285.

Patented Sept. 20, 1887.



Witnesses
Wm. V. Lindem
Alfred T. Gager

Inventor
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By *his* Attorney
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UNITED STATES PATENT OFFICE.

BARNHARD SCHAD, OF BATAVIA, NEW YORK, ASSIGNOR OF TWO-THIRDS
TO JOSEPH C. SHULTS, FRANK J. SHULTS, AND LOUIS E. SMITH, ALL
OF SAME PLACE.

VEHICLE-HUB.

SPECIFICATION forming part of Letters Patent No. 370,285, dated September 20, 1887.

Application filed March 7, 1887. Serial No. 230,007. (No model.)

To all whom it may concern:

Be it known that I, BARNHARD SCHAD, a citizen of the United States, residing at Batavia, in the county of Genesee and State of New York, have invented certain new and useful Improvements in Hubs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to wheel-hubs, and has for its object to form a hub with the spokes dovetailed in a metallic spoke-band made in one piece and without the aid of a projection to split and spread the spoke; also to increase the strength and durability of the hub, to make it light without detracting from its strength, to impart to it a symmetrical and graceful appearance, to prevent it from "dishing," and generally to improve the construction thereof. To those and such other ends as may result from the construction the invention consists in the construction of parts and manner of putting same together, hereinafter particularly described and claimed, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is a perspective of a hub with portions of the spoke-band and also of the spokes broken away. Fig. 2 is a side elevation, partly in section; Fig. 3, a cross-section on line *xx* of Fig. 2, with one spoke lifted out of its socket.

The hub proper (designated by the letter A) is made of wood in one piece and turned into the desired shape before it is forced into the metallic mortise-band. It is formed with the mortises B for the tenons of the spokes, and at the rear portion adjacent to where the back-band of the hub will lie is formed with a beveled shoulder, C, the same inclining toward the front of the hub. This shoulder is intended to form the rest for the rear of the mortise-band D, which is reamed out or beveled on its inner face, so as to fit closely and snugly upon the beveled shoulder C. This construction effectually excludes water from between the hub and band, which otherwise would enter and swell the hub and cause it to chip off at the

rear of the band. The mortise or spoke band D is made in one piece and composed of malleable iron or other like strong and tough material, and thickest or heaviest at the middle, as shown, between the points *a* and *b*, so as to make it the strongest at such point, and gracefully slopes toward the front, as shown, so that when painted it has the appearance of being a continuation of the wooden portion of the hub and imparts a light and graceful air thereto, at the same time possessing all the requisite strength for a most substantial hub.

The mortises E of the band are arranged to stagger the spokes, and are made to enlarge from the top toward the bottom, so as to form a dovetail mortise, the lower portion of the mortise being about a twenty-eighth of an inch wider than the top, (more or less.) The pressure of the walls of the mortise on the spoke where the latter enters the same is such as to compress or bind the spoke, so that the latter when it has passed that point and been relieved from that pressure will expand and fill the dovetail. When the hub is forced into this band, the mortises of the latter set back from the edges of the mortises in the hub, so as to leave offsets *d*, on which shoulders of the spokes will rest when the latter are forced in place.

The spokes F are formed with the tenons G and shoulders *c*. The portion of the spoke above the shoulders *c* is the size of the upper portion of the mortises E, so that it may snugly enter the mortise. The spoke is inserted and driven into place, so that its tenon will enter the hub-mortise and the shoulder will rest upon the hub-center. In so forcing the spoke into place, it being softer than the metal band and expansible, it spreads or expands, so as to fully and snugly fill the dovetail mortise, and thus become dovetailed in place, as shown at *e* in Fig. 3, and this without the employment of any splitting wedge or projection on the hub to split and force out the sides of the spoke. The effect is to take all strain from off the tenon and prevent it from breaking, to render it impossible to draw the spoke out of place, and impossible for the wheel to "dish" in turning short. It also brings the spoke down

onto the wooden center portion of the hub, which gives elasticity to the wheel and prevents the spokes from "drumming" out the felly.

5 As a whole, the wheel is made light and at the same time strong, is simplified and made less expensive to construct, is given elegance and grace in appearance, and is rendered safer and more durable in use.

10 I am aware that it has been proposed to make a spoke of an enlarged size, then compress it by machinery to a size that will enter a mortise in a metallic band, and then rely upon its expansion to fill cavities in the walls of the
15 mortises in said band, as shown in the patent to J. Maris, May 15, 1885, No. 317,159; but in such case the mortise contracts from its mouth downwardly, and the spoke is shaped to the mortise and subjected to a preliminary compression before insertion into the mortise, and
20 assumes its normal shape after being driven home.

I am also aware that it has been proposed to form a mortise in a metallic band with a
25 recess at its lower end, and to form the spoke with a shoulder designed to enter said recess, and thus prevent the withdrawal of the spoke, as shown in the patent to W. Casswell, April 17, 1883, No. 275,993; but in such case
30 the spoke is shaped to the form of the mortise before it is inserted, and the mortise does not expand from its mouth downwardly, and the spoke after driving home assumes its normal shape. My invention differs therefrom, among
35 other particulars, in binding the spoke by the metal band where the spoke enters the mortise and permitting the spoke to expand, so as to change the normal shape of the spoke and form a dovetail fitting the dovetail of the mortise, thus securely binding the spoke from the
40 mouth of the dovetail downwardly.

Having described my invention and set forth its merits, what I claim is—

45 1. The hub composed of the wooden center made in one piece and formed with the tenon-mortises and beveled shoulder at its rear portion, in combination with metallic spoke-band made in one piece and provided with spoke-

mortises enlarging from top to bottom, and with an inner beveled rear end to fit upon the beveled shoulder of the wooden center, substantially as described. 50

2. The hub composed of the wooden center formed with the beveled shoulder and tenon-mortises, in combination with the dovetailed mortised spoke-band formed with the beveled inner end to rest upon the beveled shoulder of the wooden center and made thickest at the middle portion, with an inclination, as shown, toward both ends, the dovetails enlarging from the top to the bottom of the mortise-band, and the spokes forced into and filling said dovetailed mortises and resting above their tenons on the wooden portion of the hub, substantially as described. 60 65

3. The hub composed of the center portion, the spoke-band made in one piece to encircle the central portion, and having the mortises enlarging from top toward the bottom to form dovetails, and the spokes forced into said dovetailed mortises and compressed by the band at the point where said spokes enter the mortises, whereby the spokes are expanded from top to base of the mortises to form dovetails fitting the mortises, the base of the mortise being free from any wedge projection to split and expand the spoke, substantially as described. 70 75

4. The within method of fitting a spoke to a hub and forming a dovetail to the spoke, consisting in forcing a wooden spoke into a mortise formed in a metallic band, which mortise shall expand from its mouth downwardly to form a dovetail, and binding the spoke between the walls of the mortise where it enters the latter and permitting it to expand below such binding-point, whereby the spoke above the tenon and below the mouth of the mortise is caused to expand to change its normal shape and form a dovetail filling the dovetailed mortise, substantially as described. 80 85 90

In testimony whereof I affix my signature in presence of two witnesses.

BARNHARD SCHAD.

Witnesses:

SAFFORD E. NORTH,
JOHN G. JOHNSON.